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Heckman et al.

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(54) **CARRIAGE FOR FOOD SLICER**

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(*) Notice: Under 35 U.S.C. 154(b), the term of this patent shall be extended for 0 days.

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Related U.S. Application Data

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(51) **Int. Cl.**[7] **B26D 7/06**
(52) **U.S. Cl.** **83/719**; 83/717; 83/729; 83/932
(58) **Field of Search** 83/713, 717, 719, 83/720, 721, 722, 723, 729, 730, 435.11, 435.15, 435.16, 437.2, 932

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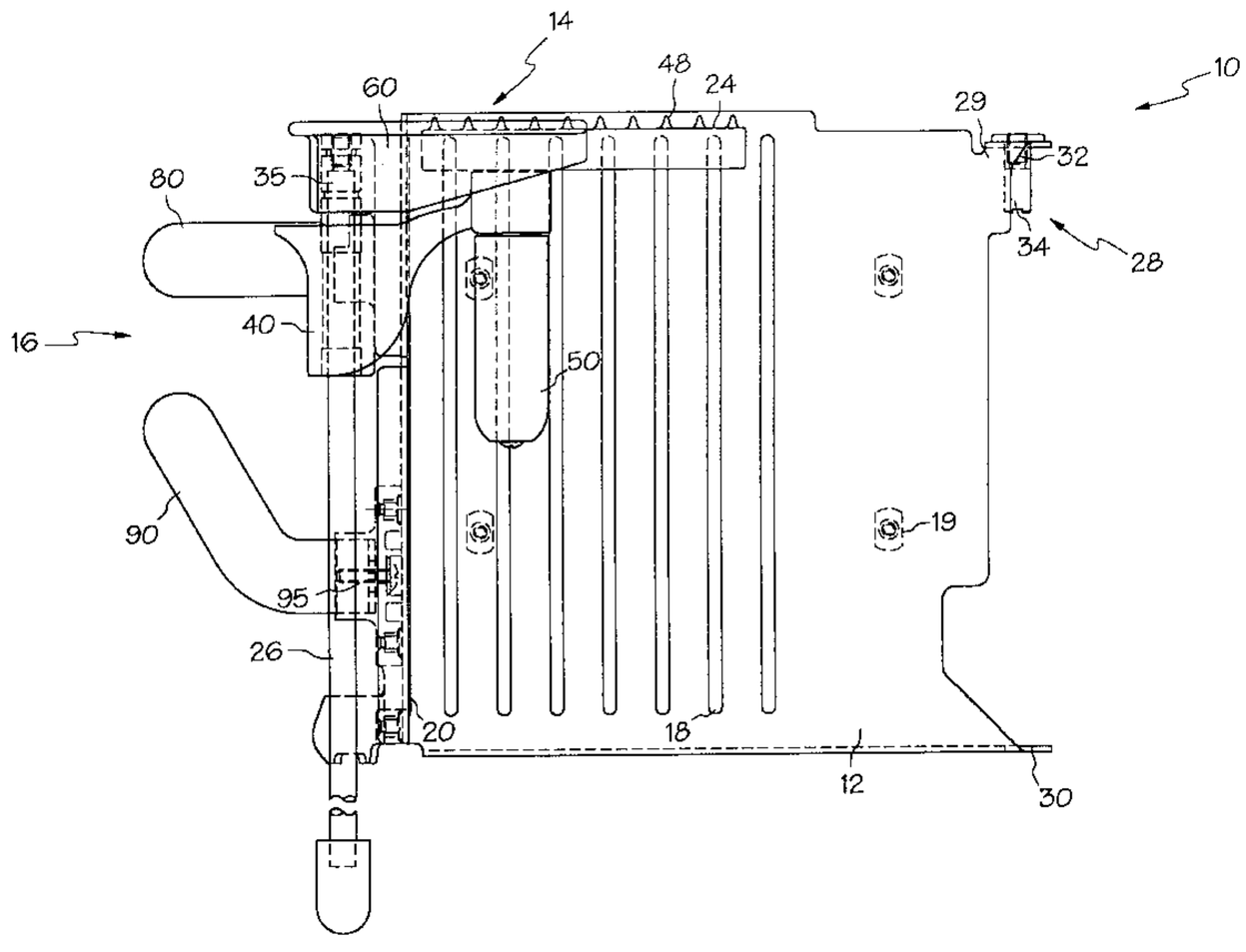
(57) **ABSTRACT**

A carriage for a food slicer; wherein the carriage includes a tray for supporting a food product. The tray has a relatively flat portion and an upstanding side portion, a food gripping portion attached to the tray and at least one handle attached to the side portion of the tray for moving the tray in a reciprocating motion past the slicing blade. Preferably, the carriage includes a second handle such that the user can grasp either handle. The tray also includes a slide rod for slidably supporting the food gripping portion. The slide rod may be optionally mounted to either side of the tray, before or after the food product.

6 Claims, 7 Drawing Sheets



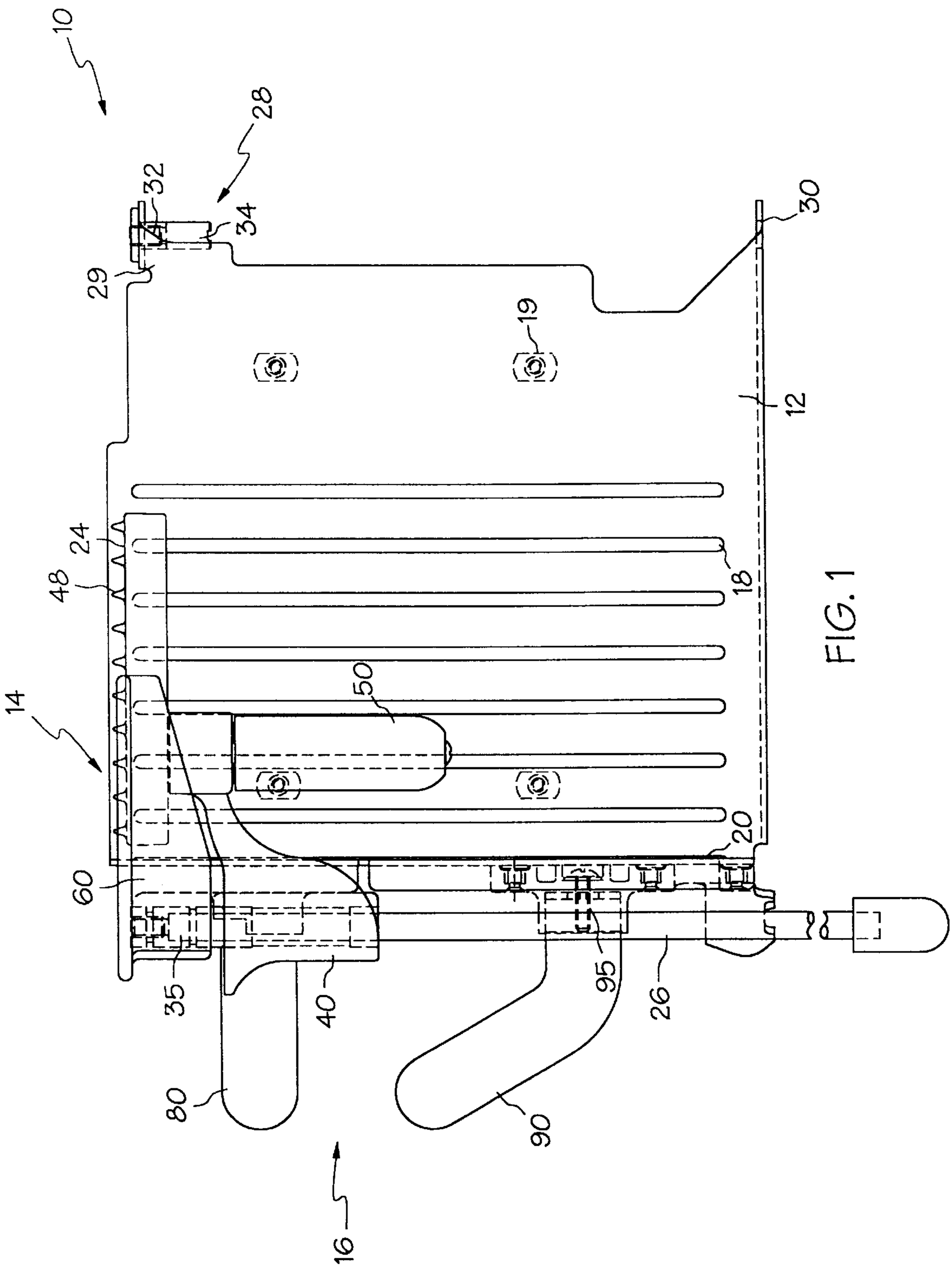


FIG. 1

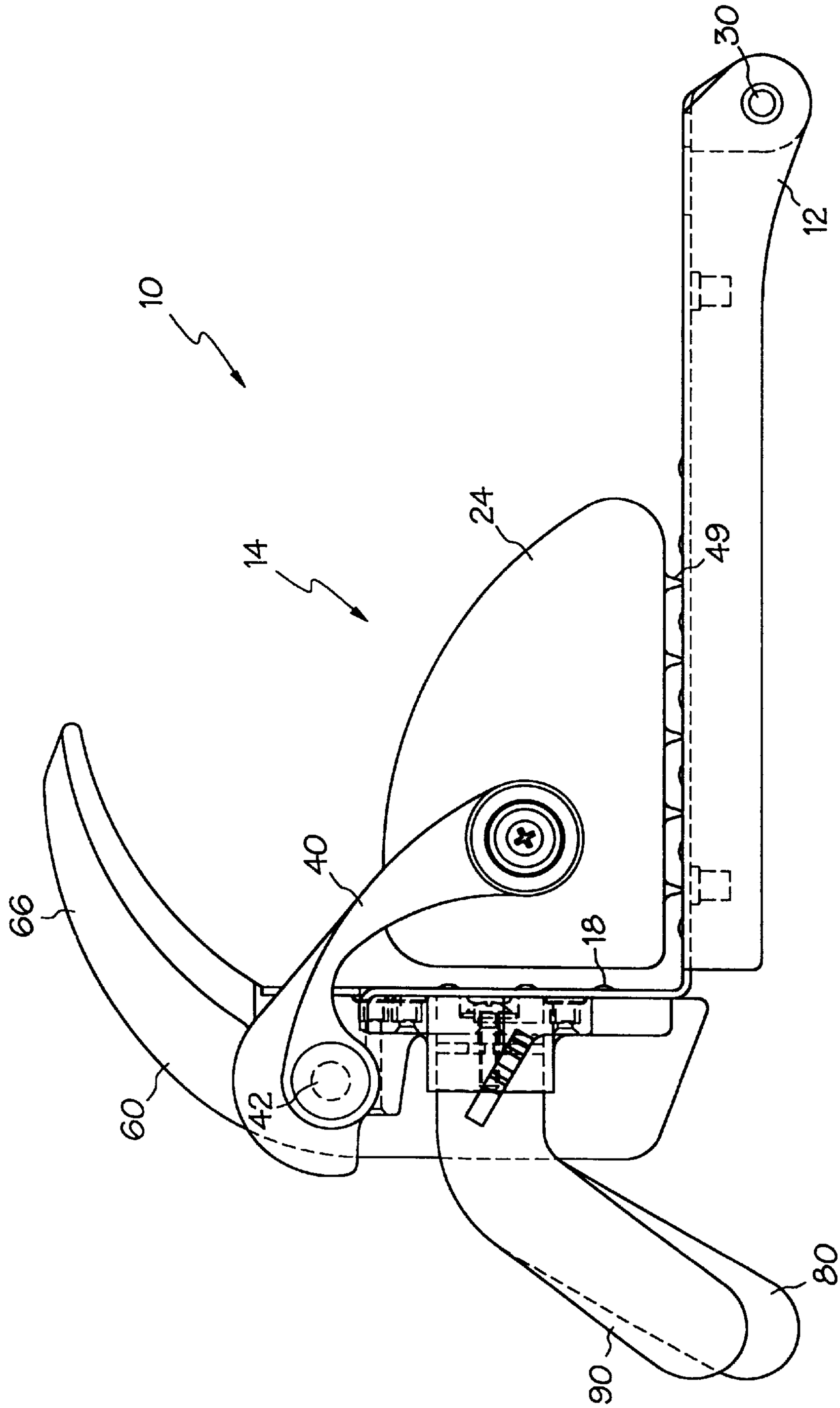


FIG. 2

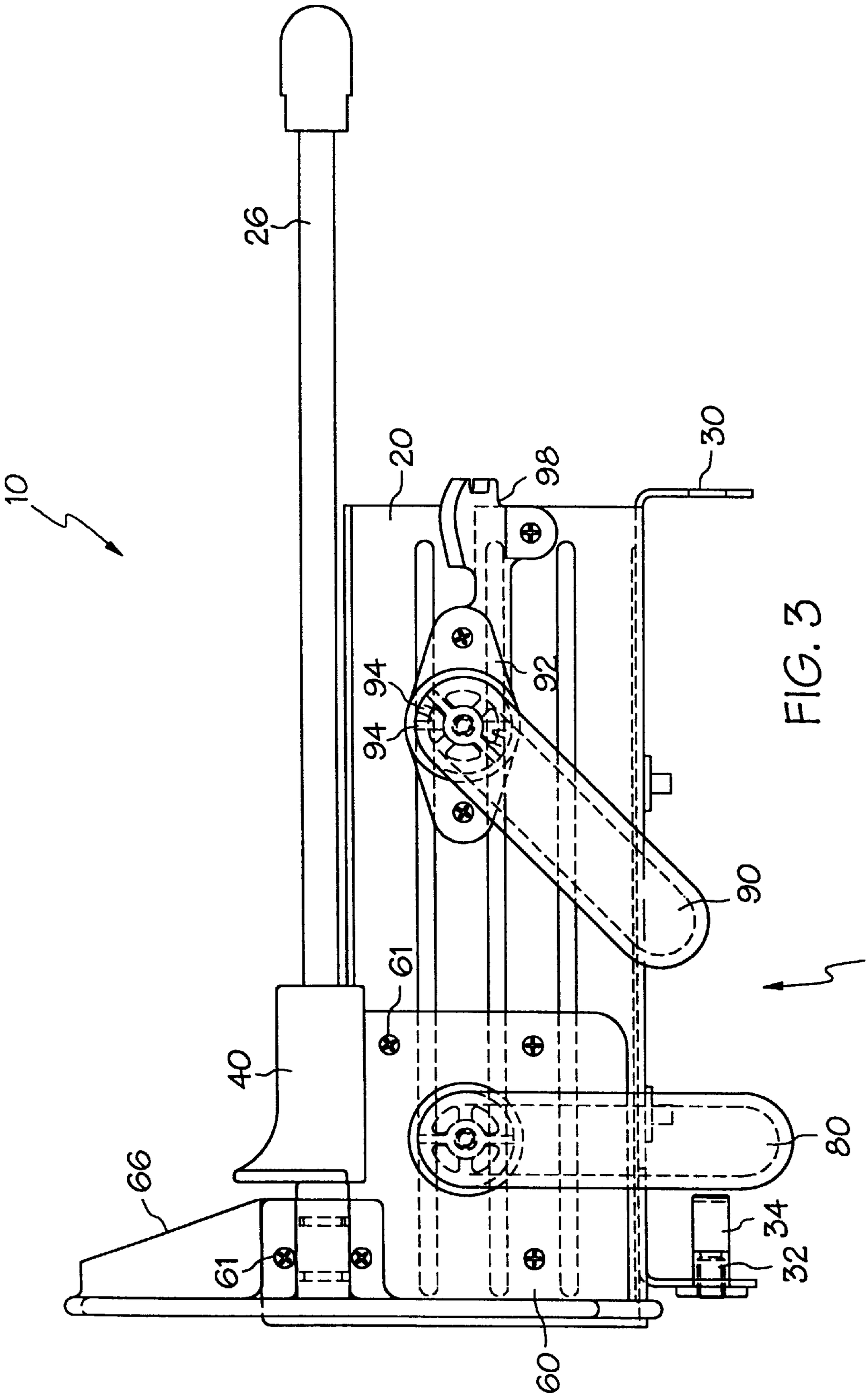


FIG. 3

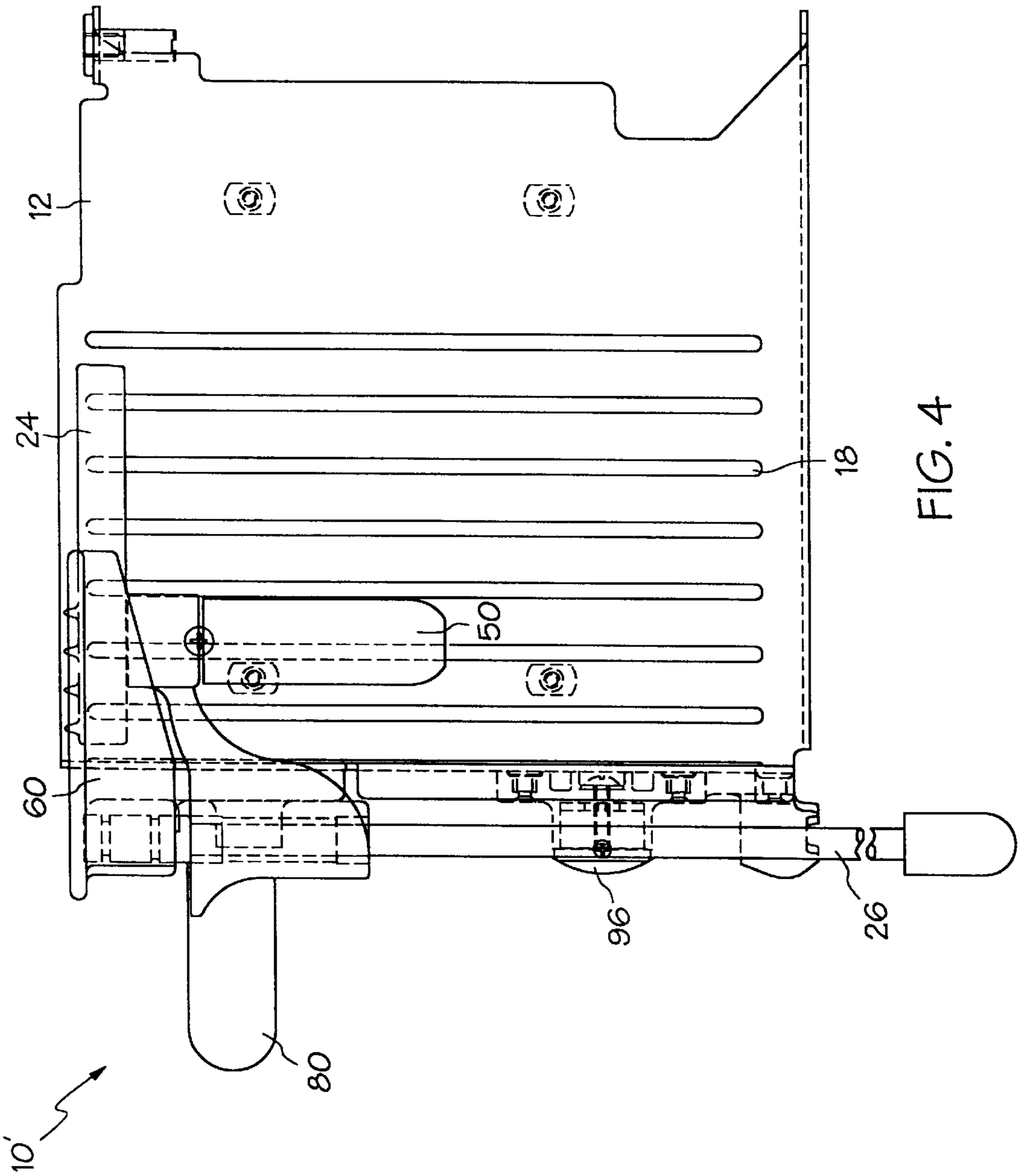


FIG. 4

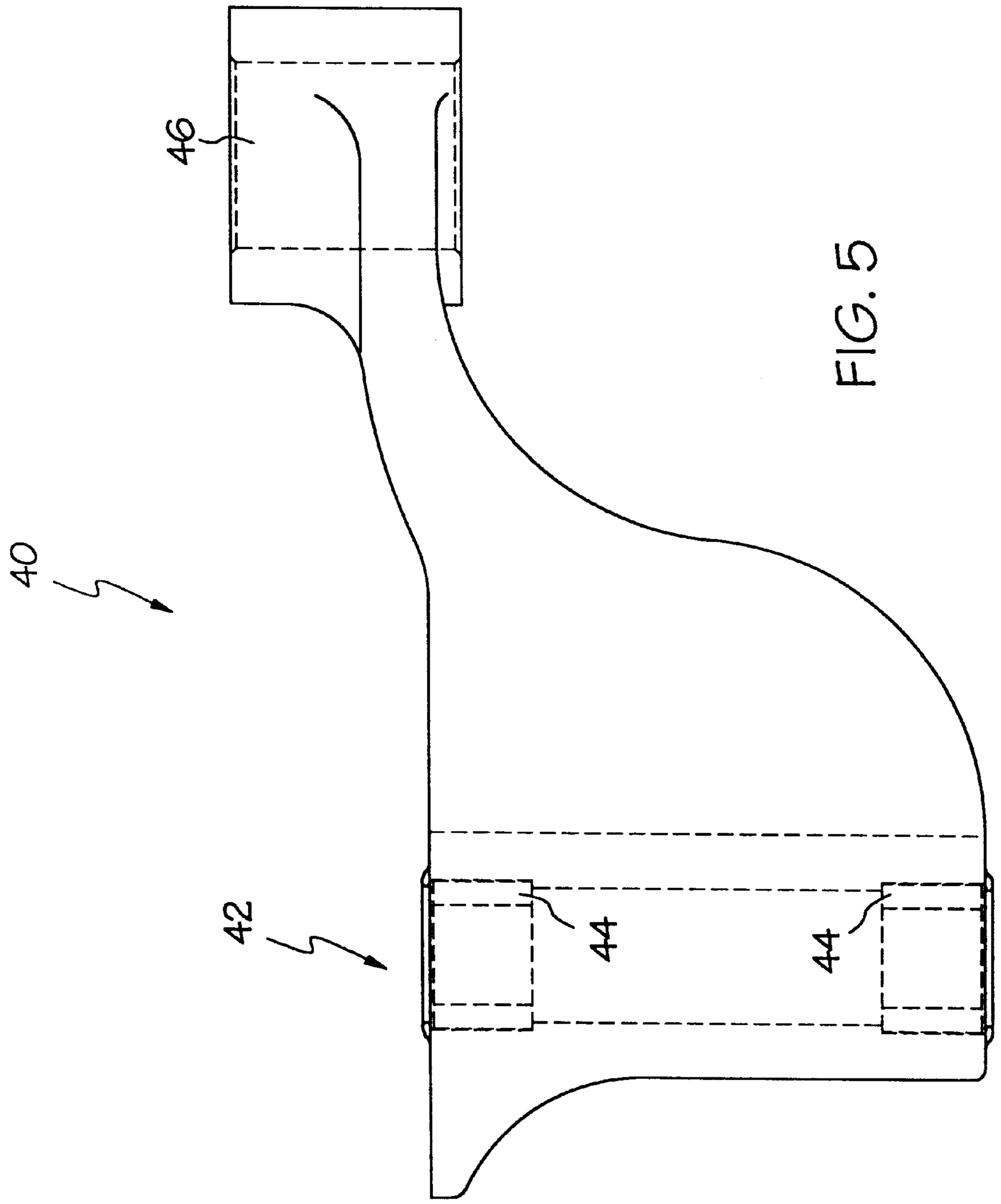


FIG. 5

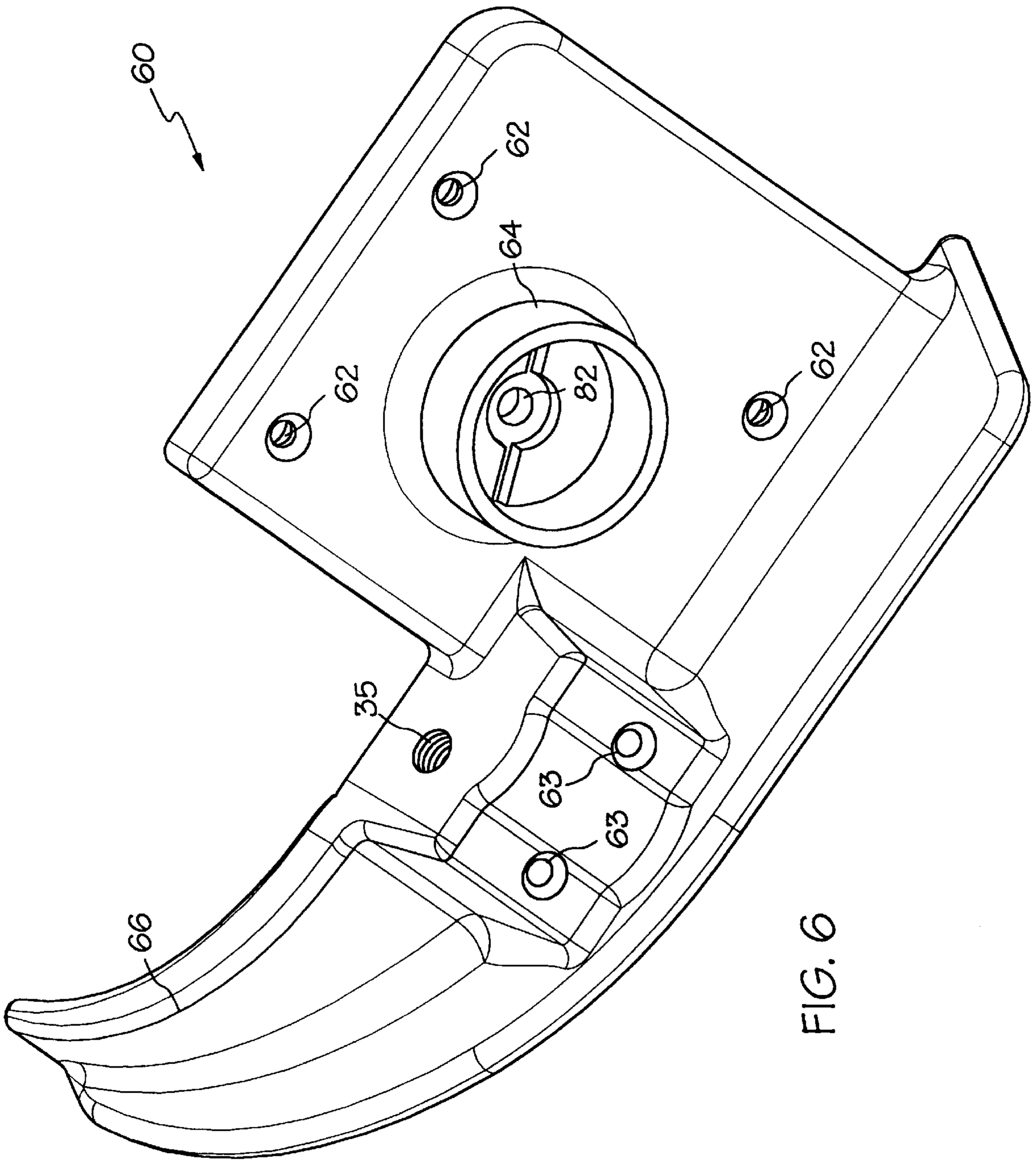


FIG. 6

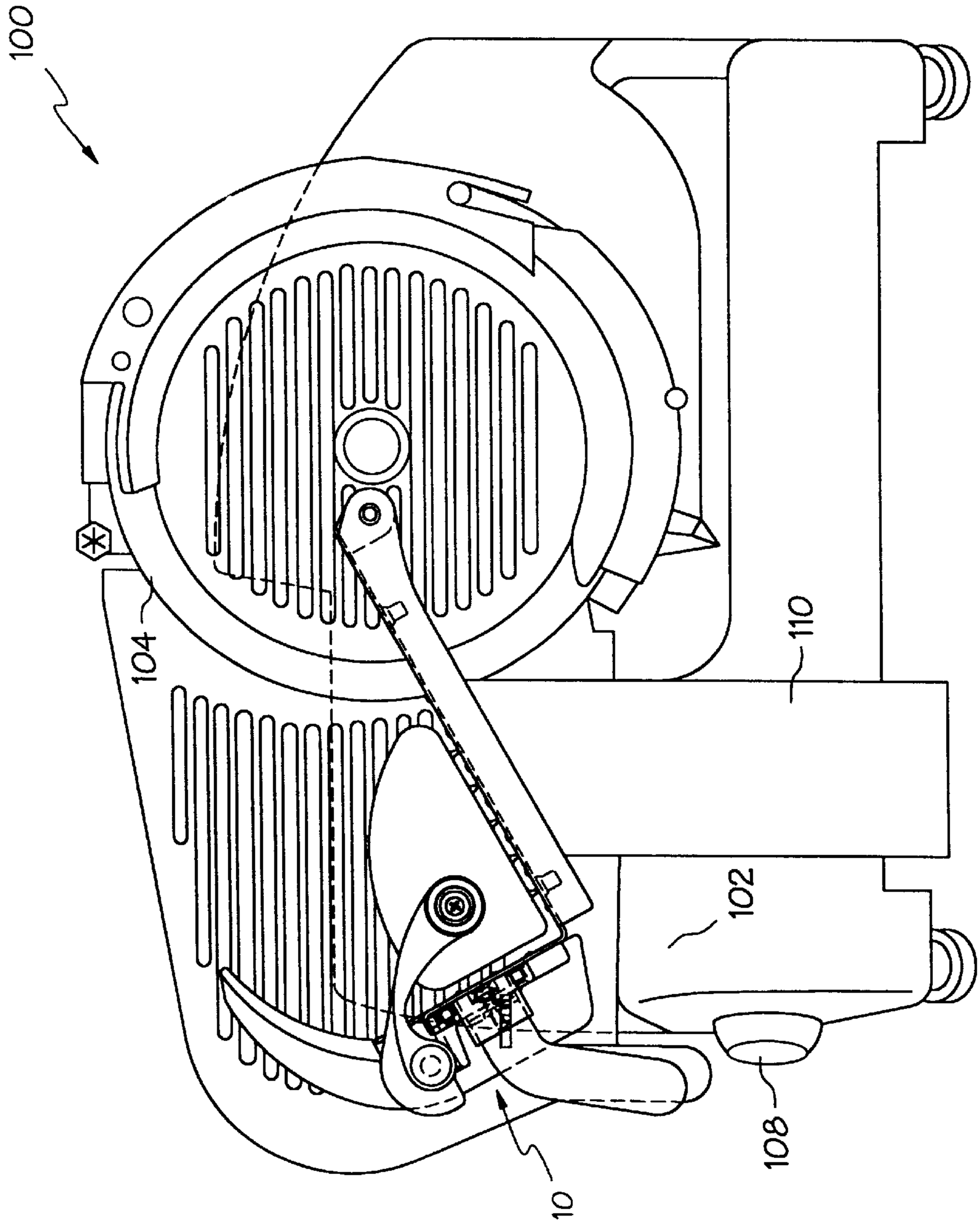


FIG. 7

CARRIAGE FOR FOOD SLICER

CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority to U.S. Provisional Application No. 60/023,987 filed Aug. 15, 1996.

BACKGROUND OF THE INVENTION

The present invention relates to a carriage for a food slicer which holds the food product during slicing, and more particularly, to a carriage having two spaced handles and a carriage in which the means for supporting the food grip can be mounted in the front or back of the food product.

Slicing machines have been commercially available for many years. Typical food slicers have a rotatable, circular or disc-like slicing blade, and use a gravity feed to keep the food product in contact with the slicing blade. In such an arrangement, the rotating slicing blade is supported for rotation about an axis which is oriented in a plane extending at an angle to vertical, such as an angle of about 45 degrees. The slicers also generally include a gauge plate associated with the knife for determining the thickness of the slice and a carriage for supporting the food as it is moved past the cutting edge of the knife during slicing.

The food product-supporting carriage is mounted in a position generally perpendicular to the slicing plane and supports the food product as it reciprocates on a linear path past the cutting edge of the knife. To set the carriage in motion, the user must physically move the carriage by hand. As the carriage is withdrawn on its return stroke from the blade, the food product slides down the inclined carriage surface by the force of gravity and into contact with the gauge plate. As the carriage is then moved on its forward or slicing stroke, the food product will engage the knife and a slice will be removed, with the thickness of the slice being determined by the position of the gauge plate with respect to the knife.

Slicers of this type may be operated either manually or controlled automatically. When using an automatic control, a specific number of slices may be produced in a slicing operation, thereby adding convenience for the user and minimizing food product wastage. To enhance productivity, the slicer may also be able to control the stroke length for the carriage as well as the carriage speed.

However, conventional slicers have been inconvenient or difficult to use. The handles in the prior art slicers are often inconveniently located, uncomfortable to use, and may require the user to exert a high degree of force. Therefore, a need exists for an improved carriage for a food slicer which overcomes the disadvantages of the conventional slicers.

SUMMARY OF THE INVENTION

The present invention is a carriage for supporting a food product as it is carried past a slicing blade of a food slicer. In a preferred embodiment of the invention, the carriage includes two separate handles, an adjustable slide rod and is shaped to receive a slide rod on either of two opposed sides. The invention also optionally includes a handle support and a food grip having floating bushings.

In accordance with one aspect of the invention, the carriage for a food slicer includes a tray for supporting a food product, the tray having a relatively flat portion and an upstanding side portion, a food gripping portion attached to the tray, a first handle attached to the upstanding side portion

of the tray for moving the tray in a reciprocating motion and a second handle attached to the upstanding side portion of the tray, wherein the second handle is at a location apart from the first handle.

In a preferred embodiment of this invention, at least one of the handles extends at an angle with respect to the tray and is adjustable. The handles are preferably sufficiently long so as to be grasped by a user in a plurality of locations on each said handle. When one of the handles is not in use, a cap is provided to cover a handle attachment on the carriage. In addition, the carriage may include a hanger for holding the gripping portion when not in use.

In accordance with a second aspect of the invention, the carriage for a food slicer includes a tray for supporting a food product, a food gripping portion attached to the tray, at least one handle attached to the tray for moving the tray, a slide rod removably attached to the tray such that the food gripping portion is slidably received on the slide rod, wherein the slide rod can be attached to either of the opposing sides of the tray.

In a preferred embodiment, the carriage includes two threaded rod attachments on the tray to receive a slide rod, the first attachment being located on one side of the tray and the second attachment being located on the opposing side of the tray. In this manner, the tray may receive the slide rod on either opposed side. The threaded attachments are preferably capped when not in use. The carriage also includes a support handle for connecting the food grip to the slide rod. The support handle is slidably received on the slide rod on a through hole. The carriage may also include a handle support to which the slide rod may be attached, wherein the handle support is attached to the tray and two handles are attached to the support such that they are attached on the upstanding retaining wall of the tray.

Accordingly, it is an object of the present invention to provide a carriage which has two handles to provide for more gripping combinations, and wherein the carriage is adjustable to provide additional flexibility in operation.

Other objects and advantages of the present invention will be apparent from the following description, the accompanying drawings and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a top plan view of the carriage for a food slicer of the present invention;

FIG. **2** is front elevational view of the carriage of FIG. **1**;

FIG. **3** is a left side elevational view of the carriage of FIG. **1**;

FIG. **4** is an alternative embodiment of the carriage of the present invention having only one handle;

FIG. **5** is a front elevational view of the food grip support which is shown as part of the carriage of FIGS. **1** and **4**;

FIG. **6** is a perspective view of the handle support portion of the carriage shown in FIG. **1**; and

FIG. **7** is a view showing the slicer carriage of the present invention on a food slicer.

DETAILED DESCRIPTION

FIGS. **1–3** show a carriage for a food slicer generally designated **10** in accordance with the present invention. The carriage **10** is for use on a food slicer as shown in FIG. **7**. The food slicer shown in FIG. **7**, generally designated **100**, is typically used for commercial slicing operations. It can be used for slicing meat, cheese, vegetables and other food

products. The slicer includes a base **102** and motor driven circular slicing blade **104** having a peripheral cutting edge. The blade is mounted to the base **102** of the slicer and a motor rotates the slicing blade by means of a fixed-axis shaft. The carriage **10** is used to support the food product as it reciprocatingly traverses the blade. The carriage is reciprocatingly driven by hand or by a motor. To adjust the thickness of each food product slice, the machine preferably includes a gauge plate which is axially adjustable with respect to the plane of the blade. The slicer also preferably includes an adjustment knob **108** for adjusting the gauge plate.

The carriage **10** is supported on a carriage arm **110**. The arm is in turn supported by a transport which reciprocates along a track under the base **102**. The carriage **10** is either pivotally or removably attached to the slicer so that it may be removed or pivoted out of the way for cleaning or servicing. Once the carriage is moved away from the body of the slicer, the edge of the cutting blade is exposed. Therefore, an interlock is preferably provided which allows the user to move the carriage only if the gauge plate has been closed and the blade is covered.

The slicing blade is mounted so that it angles back slightly with respect to horizontal. The carriage is mounted perpendicular to the slicing blade. Therefore, the food product falls by means of gravity toward said blade when in the carriage. In this manner, when the food product in the carriage gets smaller, as it is being sliced, the product slides down the inclined carriage so that it is aligned to be sliced by the blade.

As shown in FIG. **1**, the carriage includes a tray portion **12** for supporting the food product (not shown), a food gripping portion **14** and a handle portion **16**. The tray portion **12** includes a generally rectangular flat plate having ribs **18** to support the food product in a slightly elevated manner from the tray and an upstanding retaining wall **20** which intersects and forms an L cross-section with the flat tray **12**. The upstanding retaining wall **20** acts to contain the food product(not shown) to prevent it from sliding off of the tray. The upstanding portion **20** of the tray also includes ribs **18**. The tray portion **12** further includes attachments **19** to attach the carriage **10** to the carriage arm **110**. These attachments may be bolts which attach under the tray. The attachments should be recessed so that they do not extend onto the face of the plate. They should remain out of possible contact with the food product.

The food gripping portion **14** of the carriage includes a food grip **24** for holding the product so that the user may avoid contact with the food product, and a slide rod **26** for receiving the food grip. The slide rod has a threaded boss on one end and a rounded tip on the other. The threaded boss of the slide rod interconnects with a compatible threaded female portion **35** on the handle support **60**.

The food grip **24** is slidably mounted on this slide rod **26** by an intermediate food grip support **40**. This food grip support **40** is capable of easily sliding along slide rod **26**, such that as the quantity of the food product in the carriage decreases as it is being cut, the food grip is capable of sliding down the slide rod toward the cutting blade to stay in contact with the food product.

The slide rod **26** is shown on the left side of the carriage **10** in FIG. **1**. However, the carriage includes an alternative slide rod position **28** for optionally mounting the slide rod on the right side of the carriage **10**. When the slide rod is mounted in the alternative position **28**, it is preferable to use a shorter slide rod so that it does not interfere with use of the slicer. In this optional position, the carriage tray **12** includes a flange **29**. Flange **29** includes a section which is perpendicular to the tray and supports a second threaded bore **32** which is the female equivalent of threaded boss of the slide rod **26**. The slide rod can thereby be attached on the right side of the tray. To support the other end of the slide rod, a through hole **30** is provided through the top, right portion of the tray.

When this alternative slide rod position **28** is not being utilized, a cap **34** may be placed over the bore **32**. Similarly, when the alternative slide rod position **28** is being used, the cap may be placed over bore **35**. It will be apparent that when the secondary slide rod position **28** is used, a different food grip and food grip support will be required to direct the food grip forward on the tray.

As shown in FIG. **5**, the food grip support **40** has a through hole **42** so that it is capable of being slidably mounted on the slide rod **26**. For enhanced movement, bushings **44** may be utilized within the bore in order to allow the food grip to rotate freely and "float" on the slide rod. FIG. **5** shows the bushings **44** in the through hole **42**, such that the bushings are allowed to rotate freely in the through hole. The food grip support **40** further includes a second through hole **46** to receive the food grip **24** itself. The food grip comprises a shaft which fits through hole **46**. The shaft has a grip portion on one end thereof and a handle at the opposite end. The food grip **24** may rotate within the support **40**, which is itself rotatable about the slide rod **26**. Additionally, as shown in FIG. **1**, the food grip preferably includes a plurality of teeth **48** that point toward the gauge plate to grip the food product as it is pushed toward the slicing knife and teeth **49** which point toward the tray shown in FIG. **2** to hold the food product against the tray **12**. Food grip **24** also has a handle **50** for use in placing or lifting the food grip.

The carriage **10** of the present invention further comprises a handle support **60** located on the tray portion of the carriage closest to the knife blade. The handle support **60**, which is detailed in FIG. **6**, may be mounted onto the carriage tray by weld nuts or other means. It is preferably mounted on the outside of the carriage so as to not interfere with the food product on the carriage. The support may alternately be attached by means of five screws **61** as shown in FIG. **3** which go through holes **62** and **63** shown in FIG. **6**, or any other suitable means as will be apparent to those of skill in the art. The support **60** includes a slicer handle attachment boss **64**, a threaded bore attachment **35** for receiving the threaded boss on the slide rod, and an extension **66**.

The carriage **10** includes at least one and preferably two handles so that the carriage can be reciprocated or moved into position for automatic slicing. Primary handle **80** is attached to the handle support **60** by a screw or other attaching means through a hole **82** in the center of the handle attachment boss **64**.

The primary handle **80** extends downwardly from the upstanding retaining wall **20** of the tray **12**. Handle **80** is preferably long enough that it can be gripped several places along its length. The handle **80** is further preferably located at a position which is comfortable to a majority of users without requiring a high degree of force to move the carriage. In addition, the handle **80** may have a textured outer surface to improve the friction with the user's hand.

As shown in FIGS. **1** and **2**, the carriage **10** optionally includes a separate secondary handle **90** in addition to the primary handle **80**. The secondary handle **90** may be

mounted on a secondary handle support **92** which is shown in FIG. **3**. The secondary handle support **92** is mounted at a distance from the first handle **80** further upwards on the upstanding retaining wall **20** of the tray **12**. The secondary handle is also preferably long enough to be grasped at a plurality of places, and may include a textured outer surface. When both the primary and secondary handles are mounted, the user may grasp either or both handles to move the carriage.

Preferably, the angle at which this second handle **90** extends is adjustable. The handle has a rib on its end facing support **92** which fits into one of three grooves **94** in the support **92**. However, in place of three adjustments, any number of adjustment positions, or adjusting means, may be utilized. The grooves **94** extend radially from a common axis. When its angle is shifted, the end of the handle remains in the same place, but the angle at which the grip extends may be altered. Therefore, the angular position at which the handle extends can be adjusted according to the preferences of a given user. When the angular position is selected, the handle is attached to the support **92** by a screw **95** or similar attachment. In addition, the first handle **80** may also be made angularly adjustable in a similar manner. When the second handle is not being used on the carriage, the hole on the support **92** can be capped **96** as shown in alternative carriage **10'** of FIG. **4**.

Depending on the stature of the user, one of the handles may be more convenient than the other. In addition, each user will tend to take different positions during the slicing process. For example, when a user is changing the thickness of the slice, they will tend to bend over the slicing apparatus, looking over the top of the slicer to the platform where the food is collected to examine the amount of food sliced or its thickness. In this situation the user is enabled to grasp a different handle then when they are in a normal standing position.

The food grip **24** can be lifted away from the base of the carriage during the insertion of a new food product or cleaning of the slicer. In order to do this, the user grasps the handle **50** and rotates the grip support **40** along the slide rod axis **26**. As shown in FIG. **3** the second handle support **92** also preferably includes a hanger **98** for the food grip **24** to rest when not in use. The food grip can rest on the hanger so that it is out of the way during the loading of the carriage or cleaning of the slicer.

The method of manually operating a slicer **100** including the carriage **10** of the present invention will now be disclosed. The user places a food product to be sliced on the carriage with the side to be sliced facing downward toward the slicing blade. The food grip **24** is grasped by the handle **50** and lifted from the hanger **98**. Then the grip support **40** is rotated around the slide rod **26** such that the teeth **48** of the grip **24** are placed against the food product. The user then starts the motor which activates the slicing blade **104**. The user grasps one of the handles **80** or **90** and reciprocates the carriage **10** back and forth across the slicer blade until the desired amount of food product has been cut. Then the motor is turned off, the food grip **24** is rotated out of the way, and the product is removed. If necessary, the carriage can then be removed or pivoted away from the slicing blade for cleaning or servicing.

In an automatic slicer, the method of use is similar to that described above for a manual slicer. However, in place of user-driven reciprocation, a motor drives the carriage. The automatic slicer may also control the system such that the carriage automatically terminates the slicing process after a preset number of slices have been cut or the preset total weight of the cut slices has been reached. The automatic control may also control the length of travel and/or speed of the carriage.

In view of the foregoing disclosure it will be apparent that the invention includes a carriage in which a slide rod can be alternatively positioned with respect to the food product; a handle support on which a secondary handle can be mounted and pivotably adjusted and a food grip which is freely pivotable about the slide rod by means of a linkage.

Having described the invention in detail and by reference to preferred embodiments thereof, it will be apparent that modifications and variations are possible without departing from the scope of the invention as defined in the appended claims.

What is claimed is:

1. A carriage for a food slicer comprising:

a tray for supporting a food product, said tray including first and second sides defining a length of said tray, each of said first and second sides having a threaded aperture positioned proximate thereto, and third and fourth sides defining a width of said tray, wherein each threaded aperture faces toward said fourth side of said tray;

a slide rod having a threaded end removably attached to one of said threaded apertures and extending along the width of said tray from said third side of said tray toward said fourth side of said tray;

a food gripping portion including a food grip and a support, the support slidably attached to said slide rod for sliding along a length thereof to adjust a position of the food grip relative to said third side of said tray, the support rotatably attached to said slide rod for rotating the food grip relative to said tray;

a first handle extending from said tray; and

a seconded handle attached to and extending from said tray at a distance from said first handle, wherein at least one of said handles is adjustable so that an angle of one of said handles relative to the other of said handles is adjustable.

2. The carriage of claim **1** wherein each threaded aperture is located proximate to said third side of said tray.

3. The carriage of claim **1** wherein said first and second handles each extend from the same one of said sides.

4. The carriage of claim **1** wherein the tray further comprises a handle support positioned at said first side of said tray proximate to said third side thereof, one of said threaded apertures being located on said handle support.

5. The carriage of claim **4** wherein said first handle is attached to said handle support.

6. A multi-configuration carriage for a food slicer comprising:

a tray for supporting a food product, said tray having a first threaded rod attachment at a first side thereof, the threaded rod attachment facing toward an opposing second side of said tray;

a handle support attached to said tray proximate to said first side thereof, the handle support having a second threaded rod attachment facing toward the opposing second side of said tray;

a slide rod having a threaded end and being removably attached to one of said first and second threaded rod attachments;

an intermediate food grip support slidably received on said slide rod, said food grip support rotatable about said slide rod;

a food grip attached to said intermediate food grip support;

a first handle attached to said handle support; and

a second handle attached to and extending from said tray at a distance from said first handle, wherein at least one of said handles is adjustable so that an angle of one of said handles relative to the other of said handles is adjustable.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,167,791 B1
DATED : January 2, 2001
INVENTOR(S) : Thomas B. Heckman et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title page,
Item [75], Inventors, after inventor "**Robert Gerry Radwin**" the city "Waunakee" should be -- Madison --.
Item [57], **ABSTRACT**,
Line 1, the ";" after the word slicer should be -- , --.

Column 6,
Line 36, the word "seconded" should be -- second --.

Signed and Sealed this

Tenth Day of August, 2004

JON W. DUDAS
Acting Director of the United States Patent and Trademark Office